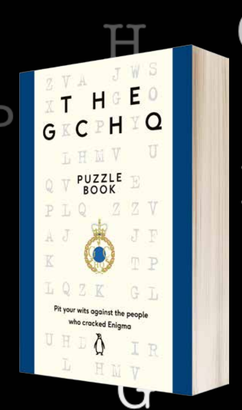


GCHQ Puzzle Book – Tiebreaker questions

Congratulations on reaching this stage. You are one of 6 people participating in this tiebreaker.

There are 14 questions in all, so you just have to solve 2 a day! However by reaching this stage you have all shown that you are highly capable puzzle solvers, and hence this tiebreaker needs to be especially challenging to enable us to determine the winner. Hence please do submit an entry even if you have not been able to answer all the questions.

Please do not discuss these tiebreaker questions with other people, or publish any of the questions or answers on the web or elsewhere.

Five questions relating to the competition so far, as it appears in the book

1. Consider the penguin message, ie the substitution code which appears around the edge of the pages containing the competition announcement. What word precedes ORDER?

2. What mistake in the penguin message would an expert in printing point out - regarding this book?

3. The inside front cover contains a message in code. Which two 9 letter words appear in it?

4. How does the competition announcement provide a hint to the enciphering method used for the message on the inside back cover?

5. On which page of the book is there an even bigger hint to this encipherment?

Nine puzzles

6. Identify These Words

a. 1L6R, 4N42, P23UM, 267ON, 725ME, 1R3TORY

b. 1U3Y, A4EI1, 1A3OM, 4IR1Y, 4U2ER, 1A2A3

c. BA3O, 1CO1, IM25, 8A6N1R, A6L46TE, 6I19EAD

d. 68MA762, 185G8537, A9936TI87, 276E98RT1, 34RA3SM, 4A6168M4R

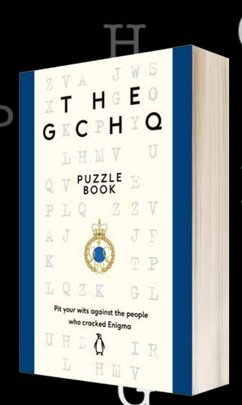
e. 6I2, U8I4, 7I12R, A54545, 276OM31, 414L355255

f. 2U2, 5A6, 2U3, CO4Y, S2I6Y, 5O1ISH

g. SP12, 17P4Y, 1N6E3, 54E2ER

h. B616, F834, 3M78N, A65E3C, F8B1D2, W89MI5

VISIT…



7. A to Z
(You just need to say what A to Z stand for, not the letters after the equals signs)

A = N-m, M, N, T, G, T, ...

B = E&C, L N, W, E, CC, PC, ...

C = ER, P, B, NHG, HSK, GR, SK, ...

D = ER, P, B, NHG, HSK, EC, WK, ...

E = G, KU, J, E, D, C, ...

F = S, M-j, K-s, S-s, H-s, N-w, ...

G = S, O-s, G, A-i, A-m, T-s, ...

H = R, K, S, C or J, H, K, ...

I = I, ZY, D-T, T-I, S-F, S-S, ...

J = S, WH, CT, NG, CW, CW, ...

K = K, V, K

L = Z, G, KP, PL, O, RV, ...

M = LL-D, L, CC, IC, MC, B, ...

N = E, BO, C, HC, BC, GG, ...

O = V, DL, WFC, EFC, B-MU, VS-GMU, ...

P = C, O, S, AG, BG, WG, ...

Q = PdC, S, MP, CR, BR, GdN, …

R = I, S, DV, JvG, P, L, ...

S = LTC, MB, AR, CH, BR, S-A, ...

T = M, H-M, K, N-K, N-N, M-K, ...

U = GL, SC, CdM, TA, CL, SB, ...

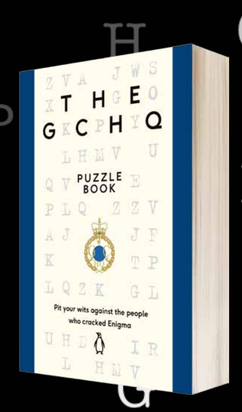
V = B, S, V, P, V, GP, ...

W = TZ, M, WC, WH, X, L, ...

X = G, D, ZX, SN, XT, ZES, ...

Y = W, C-n, C-a, H, H, K-m, ...

Z = K, D, O, T, K, K, ...



8. Identify the missing numbers. '$x' means 'the answer to question x'. Explain your answers.

a. ..., 27, 19, 18, 17, 16, 15, 14, 13, 11, 10, ?

b. 5, 1, 20, ?, 10, 2, 50, 200

c. 3, 4, 3, 8, 5,
?, 4, 3, 5, 5,
3, 4, 3, 5

d. 7, 14, 32, ?, 134, 186, 308, 384, ...

e. ..., 7, 12, 8, 16, 9, 13, 10, 15, 11, 12, 23, 6, 1, 2, ?

f. 1, 5, 6, 2, 23, ?, 27, 9, 3, 10, 34, ...

g. 14, 33, 19, 24, 5, 29, 24, 43, 19, ?, ...

h.

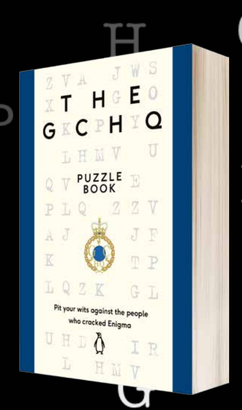
$e	?	$g - $f
$g - $f	$f	$a
$a	$b - $f	$a
$c × $f	$d	$d + $f

9. Lettersearch:

A M G I S G Z
H S O H I R E
S T I M U H T
A N E T P K A
D L C H S E R
H A P E I M A
E O A T L A M
Q T T A O S M
E E E U N H A
A D B M A L G

10. One of the setters wanted to impress the others with a grid he had created. He explained to them that the grid was like an Only Connect connecting wall, but that there were 5 different ways to solve it, and that across the five possible solutions, every word was in a set of 4 with every other word precisely once. Unfortunately in his excitement to explain he knocked over that most unstable of drinking vessels, a partially filled kwiz koffee kup, and one of the words became unreadable. Can you suggest what the missing entry might have been? (There is more than one possible answer.)

BANJUL	Caius	CURT	Darren
FRANCIS	**GALAH**	GONERIL	györ
HAIFA	hamlet	Hawk	**IAGO**
Norwich	ORIOLE	penguin	(spillage)



11. In the Kwiz archive we have a clock - a normal clock with the numerals 1 to 12, and also 13 to 24, written round the edge. However recently someone – who presumably wants to get revenge on the setters – has taken to sticking words, numbers, or codes over these numerals and moving the hands to show the time indicated by these.

The setters have solved these puzzles, naturally, and have therefore established that the words, numbers or codes in each case form a sequence going round the clock. However as soon as we have solved a sequence and removed the stuck-on words, numbers or codes from our clock, another sequence appears the next day. Below are some of these sequences. In each case below what time showed on the clock?

(a) SEAHORSE, GOOSE, WOLF, CAT, PIG, EAGLE, OWL, MOLE, FINCH, SHEEP, BEAR, FROG

(b) TNF, PLT, PREFF, OTAE, OMWF, SMV, SFWFN, FMURP, NMNF, PFN, FIFWFN, PLFIWF

(c) SYS, RAE, TDE, BSI, RAM, UMW, ATN, GSS, UIN, IRW, OHS, UCH

(d) FORGET, **CHURCH**, UNPACK, SCENIC, BARTON, PATCHY, JUBHAH, STREAM, CLOSER, QUOTES, LIKELY, CHERRY

(e) BRA, HFR, HHMSB, BDDX, LYYM, FFR, ACJGV, PPFNN, SUJG, NPX, OMIIPC, JXTFLH

(f) SFN, GOD, HUUHP, IQFI, WYMJ, LOL, AOVMU, WDMUJ, NAKD, DGR, TNSJPL, DIMEUF

(g) IY, OW, AU, WS, DO, NE, FT, HE, AE, WT, EA, RD

(h) UBCZYYMW, LOXBXJFQ, ZQKNNRS, ZGQTNJD, XIXDHBJUS, IXOATFMU, GCAFMPBW, FZDXRC, YBQSPDCHB, KQOKKJMKE, JOJQCRYTQGJ, KSWQKQVPJX

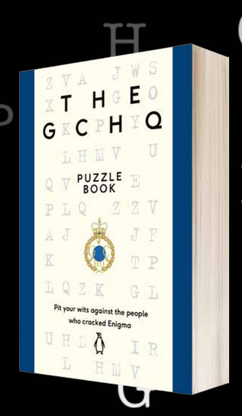
12. In each case, complete the sequence – there is more than one possible answer.

a. Ungodly morons, A bonny doorman, Cheeses and rotundity, Draymen and weirdoes, Darkly hot solution, Widow earns forgery, A dandy outsider, ?

b. Ghana Brutal Kudzus, Bahamas Glitz Gnu, Kazakh Natural Thugs, ?

And one that's made up – so please explain your answer.

c. Schlep fuzz Mr Goth qi, I write Flatland sea iambi, Hefty white doorman, Widow seducement, ?



13. The setters play a confusing version of poker, which often results in plenty of tears. Here are a few example hands:

High Card: RULED
Pair: TRUMP
Two pair: TIRED
Three of a kind: BIRDS
Straight: STAIR
Flush: SIMON
Full house: DRAMA
Four of a kind: STONE
Straight flush: STARE

In our last game one setter was annoyed to discover that he only had a high card: TEARS

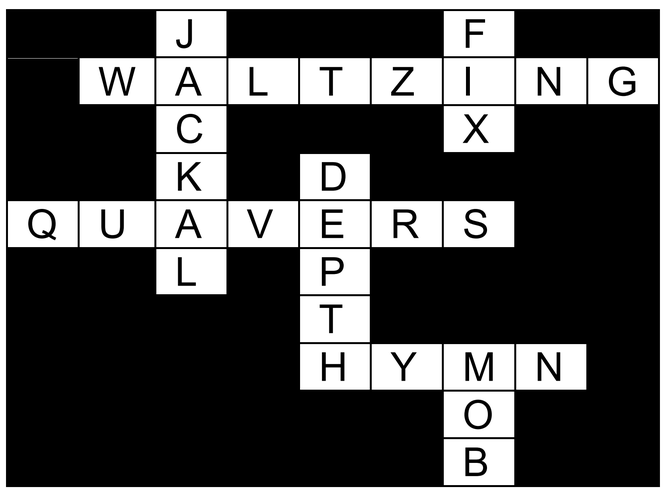
This quickly turned into frustration as he realised he'd missed the fact that he also had a pair: TEARS
His weeping turned joyful when it was pointed out that he could actually make a very strong three of a kind: TEARS

Well, can you imagine his reaction when another setter declared a straight? TEARS

This facade continued as the two setters simultaneously realised that they both had a straight flush!
TEARS

A third setter, whose mind had been wandering as he felt his luck had deserted him, drily declared his winning hand. What was it?

14. Here is a standard crossword, with words separated by black squares, not bars, and connected (ie a route can be traced from any letter to any other).



It contains all the letters of the alphabet, and is of size 10(rows) × 9(columns) = 90. Design the smallest possible connected crossword, in size terms (rows × columns), which contains all the letters of the alphabet. Letters can appear more than once, as in the example above. If you use obscure words then please give your wordlist source – and stick to it (ie please don't use one word which only appears in the OED and another which only appears in Macquarie).